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No. 09/928,639 Filed August 13

Filed August 13, 2001
Applicant: Shchepinov

GJE-53

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Mass Spectrometry

Field of the Invention

This invention relates to processes of measuring molecular mass by mass spectrometry, in particular to methods of precise calibration of mass spectrometers, and to kits and systems for use in calibrating mass spectrometers. It also relates to mixtures of compounds suitable for use in mass spectrometry.

Background to the Invention

precision required years the In recent measurements obtained by mass spectrometry has increased greatly. It is now routine that mass spectrometric data should have error not more than 1 to 5 ppm. Thus it has to obtain accurate important increasingly become calibration of mass spectrometers.

It is known to calibrate mass spectrometers by including calibration compounds of known molecular mass in the sample to be analysed. An ideal set of calibration compounds would include at least two compounds of different molecular mass, one above, one below and both close to the expected molecular mass of the material whose exact mass is to be measured. It is important that compounds of known mass have mass close to the mass to be measured, since the calibration curve is not linear.

Various types of compound are known for use as calibration compounds. These include certain sugar derivatives which can be provided with a range of molecular masses. However, they are difficult to synthesise and tend to break down during the mass spectrometry process into byproducts which result in significant background noise in the spectrum. They tend also not to be particularly good flyers in the mass spectrometer.

Alternative systems are based on peptides. However these are again expensive to make. Additionally they tend to have different signal intensities and can be difficult to find in the final spectrum.

It would be desirable to provide methods and systems for calibration of mass spectrometers which include calibration compounds of accurate and predetermined molecular mass, which fly well in the mass spectrometer and which do not give rise to breakdown products which produce background noise in the spectrum. It would also be desirable to provide calibration compounds which are straightforward and inexpensive to make.

Summary of the Invention

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According to the invention we provide a method of measuring the molecular mass of a compound Y of unknown molecular mass by mass spectrometry, comprising

providing a sample of compound Y,

providing samples of at least two different compounds each of formula (I), R-X in which R is a trityl group and X is cleavable to form a charged species for mass spectrometry,

and recording the molecular mass of compound Y and the at least two compounds of formula(I) in a mass spectrometer.

Thus in the invention we use the trityl compounds of formula (I) as calibration compounds in mass spectrometry. We find that the trityl groups are particularly suitable The trityl groups are for use as calibration compounds. readily cleaved from the compound of formula illumination with a laser in the mass spectrometer. Further, the resulting positively charged carbonium ion is very stable and thus sensitivity of detection is high. They also fly well in the mass spectrometer. The trityl markers are detectable at very low concentration and thus are less likely to interfere with the analyte by decreasing its desorption rate. Furthermore, the unique structure of the trityl group presents scope for a wide range of predetermined molecular masses which can be selected and controlled as appropriate depending upon the estimated molecular mass of the compound to be measured. For instance, precision of 0.5 to 1ppm can be obtained for molecular masses of, for instance, 350 to 800 Da. Generally

in the process the compound Y is not also of the formula R-X.

In a second aspect of the invention we provide a method of measuring the molecular mass of a compound Y of unknown molecular mass comprising estimating the expected molecular mass of compound Y, selecting at least one calibration compound of formula (I) R-X having molecular mass close to the expected molecular mass of the compound Y, in which R is a trityl group and X is cleavable to form a charged species for mass spectrometry, and subjecting both compounds to mass spectrometry simultaneously.

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In a third aspect of the invention we provide mixtures suitable for use in mass spectrometry as calibration compounds. According to this aspect we provide a set of calibration compounds for mass spectrometry comprising at least two separately packaged mixtures (a) and (b), wherein

mixture (a) comprises at least two different compounds each of formula (I) R-X and having different molecular masses

of formula (I) R-X having different molecular masses and wherein R is a trityl group and X is cleavable to form a charged species for mass spectrometry.

In a fourth aspect of the invention we provide a kit for the production of calibration compounds for mass spectrometry comprising:

- (a) at least one base reactant of formula (I) R-X where R is a trityl group and X is cleavable to form a charged species for mass spectrometry and
- 30 (b) at least two different amine compounds which are of different molecular masses and which are each capable of reacting with the base reactant and base reactant (a) is packaged separately from amine

and base reactant (a) is packaged separately from amine compounds (b).

In a fifth aspect of the invention we provide a further kit for the production of a set of calibration compounds comprising a first package comprising a base

reactant of formula (I) R-X, in which R is a trityl group and X is cleavable to form a charged species for mass spectrometry, and at least two separate second packages (a) and (b), each containing a mixture of at least two amine compounds which have different molecular masses and which are capable of reacting with the base reactant.

According to a sixth aspect of the invention we provide a mixture of at least two compounds of formula (I) R-X in which R is a trityl group and X is a group cleavable to give a charged species for analysis by mass spectrometry.

According to a seventh aspect of the invention we provide a method of mass spectrometry comprising subjecting simultaneously to mass spectrometry at least two different compounds of formula (I) R-X in which R is a trityl group and X is cleavable to give a charged species for analysis by mass spectrometry.

Description of the Preferred Embodiments

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The calibration compounds are of formula R-X in which R is a trityl group. Generally R is $R^1R^2R^3C$ - wherein R^1 , R^2 and R^3 are the same or different and each is a monocyclic or fused ring aromatic group that is substituted or unsubstituted. Preferably each of R^1 , R^2 and R^3 is aryl, preferably phenyl.

Preferably at least one of R^1 , R^2 and R^3 carries a substituent selected from $C_1\text{-}C_{20}$ alkoxy or hydrocarbyl, substituted or unsubstituted. Substituents may be present at any point in the aromatic ring, but para substituents are convenient and preferred.

When the alkoxy or hydrocarbyl is substituted the substituent is preferably selected from the group consisting of carboxylic acid, sulphonic acid, nitro, cyano, hydroxyl, thiol, primary, secondary or tertiary amino, primary or secondary amido, anhydride, carbonyl halide and active ester. In these substituents, hydrogen atoms may be partly or wholly replaced by deuterium or halogen, e.g., fluorine. This improves the range of

molecular weights available. For instance, alteration of the molecular mass may be obtained by the use of nonradioactive isotopic substituents, e.g., small alkyl groups containing 1, 2 or 3 deuterium atoms.

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It is preferred that the trityl group R is substituted with amide substituents. Substituted trityl groups of this type are particularly easy to produce, with a wide range of molecular masses. Thus preferably the trityl group R includes two or four or more amide substituents. More preferably R^1 , R^2 and R^3 together carry at least two amide groups and/or at least two reactive groups for coupling, preferably N-hydroxy hydroxysuccinimide ester groups.

The group X is cleavable to form a charged species for mass spectrometry. Usually it is photocleavable, e.g., by laser illumination. X may be any suitable leaving group, for instance halide or tosylate.

In the method at least two different compounds of formula (I), having different molecular mass, are used. Preferably the number of compounds of formula (I) larger, for instance at least 5, preferably at least 10 and The compounds of even at least 20 may be desirable. formula (I) are generally selected to have a range of molecular masses around the estimated molecular weight of Desirably the molecular masses of the compound Y. compounds of formula (I) are close to that of compound Y, for more accurate calibration. Thus in a preferred method according to the invention the molecular mass of unknown compound Y is estimated as $\boldsymbol{M}_{\!\scriptscriptstyle y}$ and at least one compound of formula (I) having known molecular mass M_1 below M_{ν} is provided, as is at least one different compound of formula (I) having molecular mass M_2 above M_{γ} . Preferably each of $\mathrm{M_{1}}$ and $\mathrm{M_{2}}$ lies in a molecular mass range not more than $\pm 50\%$ of M_{γ} . That is M_1 is not less than 50% of M_{γ} and M_2 is not greater than 150% of $M_{\rm y}$. Preferably the range is within ±25%, more preferably ±10%.

It is possible to provide prepared mixtures of at least two compounds of formula (I) which can be combined

with a sample Y of unknown molecular mass and used as calibration compounds in mass spectrometry. Such mixtures preferably comprise at least 5, more preferably at least 10 and in some cases at least 20 different compounds of formula (I).

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In the second aspect of the invention we provide a method of measuring the molecular mass of a compound Y of unknown molecular mass comprising estimating the expected molecular mass of compound Y, selecting at least one calibration compound of formula (I) R-X having molecular mass close to the expected molecular mass of the compound Y, in which R is a trityl group and X is cleavable to form a charged species for mass spectrometry, and subjecting both compounds to mass spectrometry simultaneously.

In this aspect the compound of formula (I) may have any of the preferred features indicated for the first aspect of the invention above, as appropriate.

According to the third aspect of the invention we provide mixtures suitable for use in mass spectrometry as calibration compounds. According to this aspect we provide a set of calibration compounds for mass spectrometry comprising at least two separately packaged mixtures (a) and (b), wherein

mixture (a) comprises at least two different compounds each of formula (I) R-X and having different molecular masses

mixture (b) comprises at least two further compounds of formula (I) R-X having different molecular masses and wherein R is a trityl group and X is cleavable to form a charged species for mass spectrometry.

Thus the set comprises at least two different sets of calibration compounds. Preferably each set has molecular masses extending across a different range. The ranges may overlap. Thus preferably the lowest molecular mass in mixture (a) is lower than the lowest molecular mass in mixture (b) and the highest molecular mass in mixture (a) is lower than the highest molecular mass in mixture (b).

More preferably, the set comprises at least three separately packaged mixtures of compounds, more preferably at least five separately packaged mixtures of compounds. The greater the number of separate mixtures, the greater the scope for calibration of unknown compounds of a range of molecular masses.

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Each set preferably contains at least five compounds of different molecular masses, more preferably at least ten different compounds of different molecular masses. In some cases at least twenty different compounds are desirable.

An advantage of the use of the trityl calibration compounds of the invention is that they may easily be produced to have almost any predetermined molecular weight. In particular, the trityl compounds may be produced by reacting a base reactant of formula (I) R-X with an amine. This produces an amide-substituted trityl compound. The reaction conditions may be chosen by those skilled in the art. Our earlier publication W099/60007 describes suitable reaction conditions. In that publication we describe the use of trityl compounds as tag moieties for molecules such as oligonucleotides or oligopeptides. The techniques described there for modifying molecular mass of the trityl groups may be applied in the present invention.

According to the fourth aspect of the invention we provide a kit for the production of calibration compounds for mass spectrometry comprising:

- (a) at least one base reactant of formula (I) R-X where R is a trityl group and X is cleavable to form a charged species for mass spectrometry and
- (b) at least two different amine compounds which are of different molecular masses and which are each capable of reacting with the base reactant

and base reactant (a) is packaged separately from amine compounds (b).

This kit can be supplied to end users for reaction of base reactant (a) with amine compounds (b) as desired to create a group of compounds of formula (I) of different

molecular masses. As in the earlier aspects of the invention, preferably the kit comprises at least 5, more preferably at least 10 and in some cases at least 20 different amine compounds which are of different molecular masses. Other preferred features discussed above may be applied as appropriate.

The kit can be supplied with instructions such that the end user selects at least two desired molecular masses M_1 and M_2 for the calibration compounds and chooses one or more amines for reaction with the base reactant so as to obtain compounds of formula (I) having the desired predetermined molecular masses M_1 and M_2 . These compounds may then be used in mass spectrometry.

In the fifth aspect of the invention we provide a further kit for the production of a set of calibration compounds comprising a first package comprising a base reactant of formula (I) R-X, in which R is a trityl group and X is cleavable to form a charged species for mass spectrometry, and at least two separate second packages (a) and (b), each containing a mixture of at least two amine compounds which have different molecular masses and which are capable of reacting with the base reactant.

Thus the kit is suitable for producing a set of calibration compounds according to the third aspect of the invention. As in that aspect, preferably the lowest molecular mass in mixture (a) is lower than the lowest molecular mass in mixture (b) and the highest molecular mass in mixture (a) is lower than the highest molecular mass in mixture (b). The kit may contain at least three, preferably at least five mixtures, so as to provide a greater number of mixtures. Preferably each mixture contains at least five different amine compounds, more preferably at least ten different amine compounds and in some cases at least twenty different amine compounds.

According to the sixth aspect of the invention we provide a mixture of at least two compounds of formula (I) R-X in which R is a trityl group and X is a group cleavable

to give a charged species for analysis by mass spectrometry. These mixtures are useful in calibrating mass spectrometers.

Preferably the mixture comprises at least 5, more preferably at least 10 different compounds of formula (I).

According to the seventh aspect of the invention we provide a method of mass spectrometry comprising subjecting simultaneously to mass spectrometry at least two different compounds of formula (I) R-X in which R is a trityl group and X is cleavable to give a charged species for analysis by mass spectrometry.

The invention will now be illustrated with reference to the following example.

Example '

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In this example the exact mass of a compound of The calculated exact mass formula $C_{25}H_{20}NO_5$ is determined. is produced as described by Tr(NHS) is 414.13415. Shchepinov et al in Tetrahedron 56 (2000) 2713-2724. compound is treated with butylamine and amylamine as This gives two calibration described in that publication. compounds with exact calculated masses of 402.50781 and The two calibration compounds and analyte are 416.52096. subjected to mass spectrometry and the monoisotopic mass of the analyte was determined to be 414.13621, with an error of 4.9ppm.

No.AGRI(E)192/96/79-A- During the period of absence on leave of Smti. Damonhi Shadap, Assistant Director of Horticulture (Mkt), Jowai, Shri C. Najiar, Assistant Director of Horticulture (Hort), Jowai, is allowed to hold dual charge of the post of Assistant Director of Horticulture (Mkt), Jowai, in addition to his own duties.

No.AGRI(E)101/2002/97- Subject to admissibility of leave to be certified by the Accountant General (A&E), Meghalaya, Shillong, Smti. Hannah D. Lyngdoh, Assistant Director of Horticulture (VFT), Directorate of Horticulture, Shillong is under Fundamental Rule 90 of the Meghalaya Fundamental Rules & Subsidiary Rules. 1984 granted extension of earned leave on medical ground, for another period of 30 (thirty) days with effect from 1st April, 2021 to 30th April, 2021.

The Officer would have continued to hold the post but for her proceeding on leave and is likely to return to the same post on expiry of her leave.

C.S. MARAK, Under Secretary to the Govt. of Meghalaya, Department of Agriculture & Farmers' Welfare.

The 23rd August, 2021.

No.WR(G)31/87/188- Pending recommendation by the Departmental Promotion Committee, Smti. A. S. Lyngdoh. Addl. Chief Engineer, is temporarily allowed to hold charge of the post of Chief Engineer (WR), Meghalaya, Shillong in addition to her own duties with effect from 23rd July, 2021 and until further orders.

The 24th August, 2021.

No.WR(SCH)126/2012/Pt/26 - In pursuance to the Notification No.WR(G)31/87/188, dated 23rd August, 2021 Smti. A. S. Lyngdoh, Additional Chief Engineer (WR), Meghalaya, Shillong is allowed to act as Drawing & Disbursing Officer (DDO) of the Office of the Meghalaya Water Resources Department Agency (MeWDA) and until further orders.

This has the approval of the 'Competent Authority'.

S. C. SADHU, Secretary to the Govt. of Meghalaya, Water Resources Department.

The 23rd April, 2021.

No.PW/Admn/48/2005/201- On repatriation of his services to the parent Department i.e., Public Works (R&B) Department, Meghalaya by the Government of India, North Eastern Council Secretariat, Ministry of

Development of North Eastern Region, Shillong, Shri Phrangki Pale, Assistant Executive Engineer, is in the interest of public service, posted temporarily as Assistant Executive Engineer (TC), P.W.D. (Roads), Baghmara Division, Baghmara with effect from the date of taking over charge of the post and until further orders against the existing vacant post and to relieve the Executive Engineer from holding current charge.

The 30th June, 2021

No.PW/Admn/82/2005/Pt.I/264-The Governor of Meghalaya is pleased to constitute the Selection Committee for selection of State Quality Monitoring (PMGSY) in the State of Meghalaya with the following as its members:-

1.Chief Executive Officer (CEO), SRRDA, Secretary	-	Chairman
Chief Engineer, P.W.D. (Standard) / Empowered Officer, SRRDA	-	Member
Technical Expert, State Technical Authority (Professor, IIT Guwahati)	-	Member
4. Shri K.W. Marbaniang (Rtd). IAS	-	Member
5. Shri Satish Sagar. NQM Emeritus	-	Member
6. State Quality Co-ordinator (SQC)	-	Member Convener

T. G. NENGNONG, Secretary to the Govt. of Meghalaya, Public Works (R&B) Department.

The 1st July, 2021.

No.PLR.122/2018/18- In continuation to this Department's Notification No.PLR.122/2018/16, dated 1st July, 2021, the Governor of Meghalaya is pleased to constitute the Meghalaya State Investment Promotion Bureau which will be the Project Management Unit of the Meghalaya State Investment Promotion Board.

- 2. The Executive Chairman of the Meghalaya State Investment Promotion Board shall be in charge of the Bureau.
- 3. The Bureau will be located in the Meghalaya House, New Delhi

VIJAY KUMAR D, Commissioner & Secretary to the Govt. of Meghalaya, Planning Department.

The 5th August, 2021.

No.PLA.9/2002/194— Subject to admissibility of leave to be certified by the Accountant General (A&E), Meghalaya, Shillong, Shri M. Mawroh, Research Officer, under District Planning Office, Ri-Bhoi District Nongpoh is under Fundamental Rule 90 of the Meghalaya Fundamental Rules & Subsidiary Rules, 1984 granted extension of earned leave on medical ground for another period of 76 (seventy six) days with effect from 17th July, 2021 to 30th September, 2021.

The Officer would have continued to hold the post but for his proceeding on leave in every likelihood of his returning to the same post on expiry of the leave

B. N. SANGMA, Under Secretary to the Govt. of Meghalaya, Planning Department.

The 30th July, 2021.

No.FOR.25/2002/390— On recommendation of the Joint Cadre Authority in its meeting held on 11th June, 2021 and on being allotted 2007 batch, Shri Theophilus Wanniang, IFS (SFS: 2007) Divisional Forest Officer, East Khasi Hills & Ri-Bhoi (Territorial) Division, Shillong is promoted to the Selection Grade at Level-13 in the *Pay* Matrix of the 7th Central Pay Commission with effect from 1st January, 2020.

No.FOR.25/2002/390-A- On recommendation of the Joint Cadre Authority in its meeting held on 11th June, 2021 and on being allotted 2007 batch, Shri Theophilus Wanniang, IFS (SFS: 2007) Divisional Forest Officer, East Khasi Hills & Ri-Bhoi (Territorial) Division, Shillong is promoted to Super Time Scale in the rank of Conservator of Forests at Level-13-A in the *Pay Matrix* of the 7th Central Pay Commission with effect from 19th April, 2021 i.e., the date on which his immediate junior, Shri Rajen Chaudhary, IFS (SFS: 2007) was promoted.

No.FOR.25/2002/390-B- On his promotion to the rank of Conservator of Forests (CF), Shri Theophilus Wanniang, IFS (SFS: 2007) Divisional Forest Officer, East Khasi Hills & Ri-Bhoi (Territorial) Division, Shillong is transferred and posted as Conservator of Forests (Monitoring & Evaluation) Meghalaya, Shillong *vice* Shri B. Wahlang, IFS, relieved of additional charge, with effect from the date of taking over charge and until further orders.

No.FOR.25/2002/390-C- In the interest of the public service, Shri I. Arul Gnana Mathuram, IFS, Divisional Forest Officer, Forest Utilisation Division, Shillong and Manager Corporate Planning, FDCM Ltd., Shillong is transferred and posted as Divisional Forest Officer, East Khasi Hills & Ri-Bhoi (Territorial) Division,

Shillong *vice* Shri Theophilus Wanniang, IFS, promoted, with effect from the date of taking over charge and until further orders. He shall also continue to hold additional as Manager Corporate Planning, FDCM Ltd., Shillong until further orders.

No.FOR.25/2002/390-D- In the interest of the public service, Smti. Terakchi K. Marak, IFS, Divisional Forest Officer, Working Plan Division, Shillong shall also hold additional charge as Divisional Forest Officer, Forest Utilisation Division, Shillong *vice* Shri I. Arul Gnana Mathuram, IFS, transferred, with effect from the date of taking over charge and until further orders.

D. P. WAHLANG, Additional Principal Secretary to the Govt. of Meghalaya, Forests & Environment Department.

The 13th July, 2021.

No.FOR.141/1991/259– Subject to the leave admissibility to be certified by the Accountant General (A&E), Meghalaya, Shillong, Shri S. M. Sahai, IFS, Additional Principal Chief Conservator of Forest (CC,R&T) is:-

i. Under Rule 11 of the AIS (Leave) Rules, 1955, granted earned leave on private affairs for a period of 17(seventeen) days with effect from 29th March, 2021 to 14th April, 2021 prefixing the 28th and 29th March 2021 to the leave being holidays and for a period of 16(sixteen) days with effect from 17th May, 2021 to 1st June, 2021, prefixing the 15th & 16th May 2021 to the leave being holidays.

ii. Under Rule 13 of the AIS (Leave) Rules, 1955, granted commuted leave on medical ground for a period of 20 (twenty) days with effect from 27th April, 2021 to 16th May, 2021.

The Officer would have continued to hold the post but for his proceeding on leave, and there is every likelihood of his returning to the same post after expiry of the leave,

T. S. R. MARAK, Under Secretary to the Govt. of Meghalaya, Forests & Environment Department.

The 4th June, 2021.

No.SW(S)156/2016/151– In the interest of public service, Smti. Emidaki Kharchandy, District Social Welfare Officer, South Garo Hills District, Baghmara is transferred and posted as District Social Welfare Officer, Ri-Bhoi District, Nongpoh *vice* Smti. D. Pyrbot, District Programme Officer, Shillong with effect from the date of taking over charge and until further orders.

No.SW(S)156/2016/151-A- In the interest of public service, Shri Siddhartha S. Koch, Child Development Project Officer, Rongara is allowed to hold dual charge as District Social Welfare Officer, Baghmara *vice* Smti. Emidaki Kharchandy, transferred, with effect from the date of taking over charge and until further orders.

No.SW(S)156/2016/151-B- On taking over charge by Smti. Emidaki Kharchandy, Smti. Dwanibha Pyrbot, District Programme Officer, Shillong is relieved of her additional charge as District Social Welfare Officer, Nongpoh, Ri-Bhoi District with effect from the date of handing over charge.

SAMPATH KUMAR, Principal Secretary to the Govt. of Meghalaya, Social Welfare Department.

The 29th April, 2021.

No.SW(S)156/2016/150— In the interest of public service Smti. H. Ch. Sangma, District Social Welfare Officer, Tura is allowed to hold dual charge of the office of the Joint Director of Social Welfare, Tura in addition to her own duties *vice* Smti. B. Passah (Retired), with effect from the date of taking over and until further orders.

The 24th June, 2021

No.SW(S)156/2016/Pt-I/11— In the interest of public service Smti. V. C War, District Social Welfare Officer, Williamnagar is transferred and posted as District Social Welfare Officer, Nongstoin *vice* Smti. L.Thongnibah (Retired) with effect from the date of taking over and until further orders.

No.SW(S)156/2016/Pt.I/II-A- In the interest of public service, Smti. S. A. Sangma, District Programme Officer, ICDS (Cell) Williamnagar is allowed to hold dual charge of the office of the District Social Welfare Officer, Williamnagar in addition to her own duties with effect from the date of taking overcharge and until further orders.

The 25th June, 2021.

No.SW(S)167/1997/355— In exercise of the power conferred under section 8(B) (1) of the Dowry Prohibition Act., 1961 the Governor of Meghalaya is pleased to appoint Shri Shabhir S. Dkhar, MPS, Dy. Superintendent of Police, Cyber Crime Wing, CID, Shillong as Dowry Prohibition Officer with jurisdiction over the whole State of Meghalaya for a period of 3 (three) years with effect from the date of Notification.

The Dowry Prohibition Officer shall exercise and perform the following duties and functions namely: -

- a) To see that the provision of the Act., are complied with.
- b) To prevent as far as possible, the taking or abetting the taking of or the demanding of Dowry.
- c) To collect such evidence as maybe necessary for the prosecution of persons committing offences, under the Act., and
- d) To perform such additional functions as may be specified in the rules made under the Act.

The Dowry Prohibition Officer can be contacted at Mobile No.7005208854 & email ID Shabir.dkhar @gov.in/shabbirsdkhar@gmail.com

M. N. NAMPUI, Commissioner & Secretary to the Govt. of Meghalaya, Social Welfare department.

The 13th March, 2021.

No.LBG.8/2016/40— Subject to admissibility of leave to be certified by the Accountant General (A&E), Meghalaya, Shillong, Smti. Bethcey Merry Toi, Labour Inspector, District Labour Office, Jowai is under Subsidiary Rule 111 (1) of the Meghalaya Fundamental Rules & Subsidiary Rules, 1984 granted commuted leave on medical ground for 60 (sixty) days with effect from 19th January, 2021 to 20th March, 2021 with a request to suffix the 21st March, 2021 being holiday to the leave (Medical Certificate is enclosed).

The Officer would have continued to hold the same post but for her proceeding on leave and there is every likelihood of the Officer returning to the same post on expiry of the leave.

The 15th March, 2021.

No.LBG.73/2015/64— Subject to admissibility of leave to be certified by the Accountant General, Meghalaya, Shillong, Shri. Lamshwa Kitbok Nongrum, Labour Inspector, District Labour Office, Shillong is under Fundamental Rule 90 of the Meghalaya Fundamental Rules & Subsidiary Rules, 1984 granted extension of earned leave for another period of 43 (forty three) days on private affairs with effect from 26th February, 2021 to 9th April, 2021 with a request to suffix the 10th and 11th April, 2021 being holidays to the leave.

The Officer would have continued to hold the same post but for his proceeding on leave and there is every likelihood of the Officer returning to the same post on expiry of the leave.

S. M. SANGMA, Under Secretary to the Govt. of Meghalaya, Labour Department.